

JAPAN

EDICT OF GOVERNMENT

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JIS C 9335-2-9 (2004) (English): Household and similar electrical appliances -- Safety -- Part 2-9: Particular requirements for toasters, grills, roasters and similar appliances

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

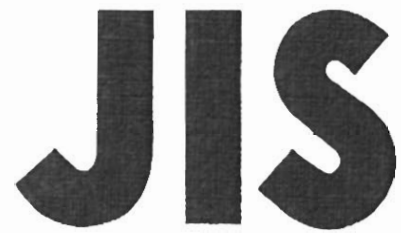
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JAPANESE
INDUSTRIAL
STANDARD

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JIS C 9335-2-9 : 2004
(JEMA)

**Household and similar electrical
appliances—Safety—
Part 2-9 : Particular requirements
for toasters, grills, roasters and
similar appliances**

ICS 13.120; 97.040.20

Reference number : JIS C 9335-2-9 : 2004 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Electrical Manufacturer's Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 9335-2-9 : 1998** is replaced with this Standard.

This revision has been made based on **IEC 60335-2-9 : 2002** *Household and similar electrical appliances—Safety—Part 2-9 : Particular requirements for toasters, grills, roasters and similar appliances* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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Household and similar electrical appliances—Safety— Part 2-9 : Particular requirements for toasters, grills, roasters and similar appliances

Introduction This Japanese Industrial Standard has been prepared based on IEC 60335-2-9 *Household and similar electrical appliances—Safety—Part 2-9 : Particular requirements for toasters, grills, roasters and similar appliances* published in 2002 as the fifth edition and amendment 1 : 2002 with some modifications in the technical contents. This is to be read in conjunction with JIS C 9335-1 : 2003 *Household and similar electrical appliances—Safety—Part 1 : General requirements*.

In this Standard, the portions underlined with dots are the matters modified from the original International Standard. The list of modifications is given in annex 1 (informative) with the explanation being attached.

1 Scope This Standard deals with the safety of electric portable appliances for household purposes that have a cooking function such as baking, roasting and grilling, their rated voltage being not more than 250 V.

NOTE 101 Examples of appliances that are within the scope of this Standard are

- barbecues for indoor use;
- contact grills (griddles);
- cookers;
- food dehydrators;
- hotplates;
- portable ovens;
- raclette grills;
- radiant grills;
- roasters;
- rotary grills;
- rotisseries;
- toasters;
- oven toasters;
- waffle irons;

Examples are illustrated in figure 101.

As far as is practicable, this Standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 102 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, water supply authorities and similar authorities.

NOTE 103 This Standard does not apply to

- stationary ovens and stationary grills (**JIS C 9335-2-6**);
- warming plates (**JIS C 9335-2-12**);
- frying pans and deep fat fryers (**JIS C 9335-2-13**);
- microwave ovens (**JIS C 9335-2-25**);
- barbecues for outdoor use (**JIS C 9335-2-78**);
- appliances intended for commercial catering;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

NOTE : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

IEC 60336-2-9 *Household and similar electrical appliances—Safety—Part 2-9 : Particular requirements for toasters, grills, roasters and similar appliances* (MOD)

2 Normative references Normative references shall be as stated in clause 2 of **JIS C 9335-1**.

3 Definitions For the purpose of this Standard principal definitions in clause 3 of **JIS C 9335-1** is applicable except as follows.

3.1.9 Replacement

normal operation operation of the appliance as specified in the following subclauses

NOTE 101 Appliances not mentioned but which nevertheless perform one of the functions are operated as specified for this function as far as possible.

3.1.9.101 Toasters are loaded with the maximum number of slices of white bread specified in the instructions and operated in cycles, each cycle consisting of an operation period and a rest period. The bread is approximately 24 h old and the dimensions of the slices are approximately 120 mm × 130 mm × 20 mm. The rest periods

have a duration of 30 s or the minimum period needed for the resetting of a control, whichever is longer. The slices of bread are replaced during each rest period. The operating period is established by adjusting controls to give the bread a golden-brown colour. For toasters without a control, each operating period is terminated as soon as the colour of the bread turns golden-brown.

Toasters incorporating a device for heating rolls are loaded with the maximum number of rolls specified in the instructions. The toaster is operated in cycles, each cycle consisting of an operating period followed by a rest period of 30 s when the rolls are turned or replaced. The control is adjusted in accordance with the instructions. If instructions are not given, the control is adjusted for the toasting operation.

Sandwich-toasting attachments are loaded with one or more sandwiches that are positioned in accordance with the instructions to produce the most unfavourable result. Each sandwich comprises two slices of white bread filled with a single slice of suitable cheese having an area equal to a slice of bread and a thickness of approximately 5 mm. The toaster is then operated in accordance with the instructions in cycles, each cycle consisting of a toasting operation followed by a rest period of 30 s, or the minimum period needed for the resetting of a control, whichever is longer.

NOTE : Processed cheese and other cheeses that readily melt when heated are suitable.

3.1.9.102 Rotary grills are operated with the load on the rotating spit shown in figure 102.

NOTE : If the maximum load is stated in the instructions, a weight of the said mass shall be used.

3.1.9.103 Waffle irons having a thermostat are operated with the thermostat adjusted to the highest setting. Other waffle irons are operated so that the temperature at the centre of the heated surface is maintained at $210\text{ }^{\circ}\text{C} \pm 15\text{ }^{\circ}\text{C}$ by switching the supply on and off.

3.1.9.104 Oven toasters and ovens are operated with the door closed. Ovens having a thermostat are operated so that the mean temperature in the centre of the cavity is maintained at $240\text{ }^{\circ}\text{C} \pm 4\text{ }^{\circ}\text{C}$ or at the value obtained with the thermostat adjusted to its highest setting, if this results in a lower temperature. Other ovens are operated so that the temperature in the centre of the cavity is maintained at $240\text{ }^{\circ}\text{C} \pm 15\text{ }^{\circ}\text{C}$ by switching the supply on and off.

3.1.9.105 Roasters are operated with the lid closed. The mean temperature in the centre of the container is maintained at $240\text{ }^{\circ}\text{C} \pm 4\text{ }^{\circ}\text{C}$, if necessary by switching the supply on and off.

3.1.9.106 Radiant grills, rotary grills and raclette (a Swiss dish consisting of boiled potatoes with melt cheese) appliances are operated with the controls adjusted in accordance with the instructions, or if instructions are not provided with the controls adjusted to the highest setting. Doors or lids are open unless otherwise specified in the instructions.

Contact grills having a thermostat are operated with the thermostat adjusted to the highest setting. Other contact grills are operated so that the temperature at the centre of the heated surface is maintained at $275^{\circ}\text{C} \pm 15^{\circ}\text{C}$ by switching the supply on and off.

Raclette grills are operated with doors or lids open, unless otherwise specified in the instructions. Controls are adjusted in accordance with the instructions, pans being in position or removed, whichever is more unfavourable.

3.1.9.107 Barbecues are operated with food supports in the lowest position. Controls are adjusted to the highest setting, any covers or shields being positioned in accordance with the instructions.

NOTE : Barbecues are operated without water even if the use of water is recommended.

3.1.9.108 Hotplates, other than induction hotplates, are operated with vessels containing water. The vessels are made of unpolished commercial quality aluminium, have a flat bottom and are covered with a lid. A suitable vessel is specified in figure 103. Controls are adjusted to their highest setting until the water boils and then adjusted so that the water simmers. Water is added to maintain the level during boiling.

NOTE 1 The lid is positioned so that steam does not affect the test.

Induction hotplates are operated with vessels, as specified in figure 104, containing cooking oil. Controls are adjusted to their highest setting until the oil temperature reaches $180^{\circ}\text{C} \pm 4^{\circ}\text{C}$ and are then adjusted so that this temperature is maintained. The oil temperature is measured 1 cm above the centre of the bottom of the vessel.

For all hotplates, the diameter of the bottom of the vessel is approximately equal to the diameter of the cooking zone and the quantity of liquid is specified in table 101. The vessel is positioned centrally on the cooking zone.

Table 101 Quantity of liquid in the vessel

Diameter of cooking zone mm	Quantity of water or oil L
≤ 110	0.6
> 110 and ≤ 145	1
> 145 and ≤ 180	1.5
> 180 and ≤ 220	2
> 220 and ≤ 300	3

NOTE 2 If several cooking zones are marked for one hotplate, the most unfavourable zone is used for the test.

NOTE 3 For non-circular cooking zones, the smallest non-circular vessel is used that will cover the cooking zone as far as possible, taking into account the hob rim and other vessels. The quantity of liquid is determined on the basis of the minor diameter of the cooking zone.

3.1.9.109 Raclette appliances are operated with the controls adjusted in accordance with the instructions, or if instructions are not provided, with the controls adjusted to the highest setting.

3.1.9.110 Food dehydrators are operated empty.

3.101 toaster appliance intended for toasting slices of bread by radiant heat

3.102 waffle iron appliance having two heated hinged plates that are shaped to contain batter

3.103 oven appliance having a heated cavity with a door and constructed so that food that may be in a container can be placed on a shelf

3.104 roaster appliance having a heated container with a lid and constructed so that food can be placed in it

3.105 rotary grill appliance having a visible glowing heating element and a rotating spit to support the food

NOTE : A rotary grill is also known as a rotisserie.

3.106 radiant grill appliance having a visible glowing heating element and a support on which food can be placed

NOTE : A radiant grill may be placed in a compartment with or without a door.

3.107 contact grill appliance having a heated surface on which food is placed. It may have a second heated surface to cover the food

NOTE : A contact grill with only one heated surface is known as a griddle.

3.108 sandwich-toasting attachment accessory for use with a toaster for toasting sandwiches

3.109 raclette grill appliance for melting slices of cheese placed in small pans positioned under the heating element

NOTE : Raclette grills may have a surface that is used as griddle.

3.110 raclette appliance radiant grill for melting the surface of a large piece of cheese

3.111 barbecue radiant grill having a heating element located under the food support

3.112 hotplate appliance having one or more heating units on which vessels can be placed for cooking purposes

NOTE : Hotplates do not incorporate an oven or grill.

3.113 induction hotplate hotplate that can heat at least one metallic vessel by means of eddy currents

NOTE : The eddy currents are induced in the bottom of the vessel by the electromagnetic field of a coil.

3.114 cooker appliance incorporating a hotplate and an oven

NOTE : Cookers may incorporate a grill.

3.115 food dehydrator appliance for dehydrating food by means of heated air

NOTE : The appliance may incorporate a fan.

3.116 heating unit part of the appliance that fulfils an independent cooking or warming function

3.117 cooking zone area marked on a hotplate where the vessel is placed for heating food

3.118 touch control control actuated by contact or proximity of a finger, with little or no movement of the contact surface

3.201 flat control control actuated by moving of mechanical contacts pushed by a finger. However, control by a pressure not exceeding 0.4 N is considered to be touch control.

3.202 oven toaster appliance mainly intended for toasting slices of bread or other shaped bread (hot dogs, rolls, etc.) by placing them on roasting net in a box type roasting chamber. Requirements for ovens are applicable for oven toasters.

4 General requirement General requirement shall be as stated in clause 4 of JIS C 9335-1.

5 General conditions for the tests General conditions for the tests shall be as stated in clause 5 of JIS C 9335-1 except as follows.

5.2 Addition to 5.2 of JIS C 9335-1:

NOTE 101 If the test of 15.101 has to be carried out, three additional samples are required.

5.3 Addition to 5.3 of JIS C 9335-1:

If it is evident from the construction of the appliance that the test of one function will produce more favourable results than another, this function is not tested.

5.6 Addition to 5.6 of JIS C 9335-1:

If two or more cooking functions can be performed simultaneously, they are tested at the same time.

5.101 Induction hotplates are operated as specified for motor-operated appliances. Other appliances are tested as specified for heating appliances, even if they incorporate motors.

6 Classification Classification shall be as stated in clause 6 of JIS C 9335-1.

7 Marking and instructions Marking and instructions shall be as stated in clause 7 of JIS C 9335-1 except as follows.

7.1 Addition to 7.1 of JIS C 9335-1:

The rated power input or rated current of induction hotplates shall also be marked.

- Appliances intended to be partially immersed in water for cleaning shall be marked with the maximum level of immersion and the substance of the following:

Do not immerse beyond this level.

7.12 Addition to 7.12 of JIS C 9335-1:

- The instructions for appliances incorporating an appliance inlet, and intended to be partially or fully immersed in water for cleaning, shall state that the connector must be removed before the appliance is cleaned and that the appliance inlet must be dried before the appliance is used again.
- The instructions for appliances intended to be used with a connector incorporating a thermostat shall state that only the appropriate connector must be used.
- The instructions for ovens shall include the substance of the following:

The door or the outer surface may get hot when the appliance is operating.

- The instructions for oven toasters and toasters shall include the substance of the following:

The bread may burn, therefore do not use the toaster near or below combustible material, such as curtains. Keep your eye on the toaster.

- The instructions for barbecues shall include the substance of the following:
WARNING : Charcoal or similar combustible fuels must not be used with this appliance.

- The instructions for barbecues intended to be used with water shall state the maximum quantity of water to be poured into the appliance.

- The instructions for hotplates having surfaces of glass-ceramic or similar material protecting live parts shall include the substance of the following:

WARNING : If the surface is cracked, switch off the appliance to avoid the possibility of electric shock.

- The instructions for induction hotplates shall include the substance of the following:

Metallic objects such as knives, forks, spoons and lids should not be placed on the hotplate since they can get hot.

8 Protection against access to live parts Protection against access to live parts shall be as stated in clause 8 of **JIS C 9335-1** except as follows.

8.1.1 Addition to 8.1.1 of JIS C 9335-1:

For toasters having a crumb tray, the test finger is not applied through the crumb-tray opening to live parts that are disconnected by the operation of a double pole switch. However, it shall not be possible to touch these parts with test probe 41 of **IEC 61032**.

9 Starting of motor-operated appliances Clause 9 of **JIS C 9335-1** is not applicable.

10 Power input and current Power input and current shall be as stated in clause 10 of **JIS C 9335-1** except as follows.

10.1 Addition to 10.1 of JIS C 9335-1:

The power input of induction hotplates is measured separately. Tolerances for motor-driven appliances are applied.

10.2 Addition to 10.2 of JIS C 9335-1:

The current of induction hotplates is measured separately. Tolerances for motor-driven appliances are applied.

11 Heating Heating shall be as stated in clause 11 of **JIS C 9335-1** except as follows.

11.2 Addition to 11.2 of JIS C 9335-1:

Radiant grills and raclette grills that are loaded from the front, rotary grills, ovens, hotplates and cookers are placed with their backs as near as possible to one of the walls of the test corner and away from the other wall. Other appliances are placed away from the walls.

11.3 Addition to 11.3 of JIS C 9335-1:

NOTE 101 If the magnetic field of an induction hotplate unduly influences the results, the temperature rises can be determined using platinum resistances with twisted connecting wires or any equivalent means.

11.4 Addition to 11.4 of JIS C 9335-1:

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or electronic circuits, and the power input is lower than the rated power input, the test is repeated with the appliance supplied at 1.06 times rated voltage.

11.7 Replacement of 11.7 of JIS C 9335-1:

Toasters are operated for 15 min under normal operation. Unless they are constructed to toast only one slice of bread, they are tested for a further 5 min with one slice of bread inserted in the most unfavourable position.

Toasters incorporating a device for heating rolls are operated for five cycles.

Toasters having sandwich-toasting attachments are also tested for five cycles of operation. They are also tested for one cycle of operation with the sandwich in the most unfavourable position.

Radiant grills are operated for a period of 30 min, for the maximum period indicated in the instructions or for the maximum period allowed by a timer, whichever is the longer. The controls are adjusted to the highest setting.

Ovens, roasters and rotary grills are operated until steady conditions are established but for not longer than 60 min. However, if a rotary grill has a timer, the timer is reset as many times as necessary to establish steady conditions.

Contact grills having thermostats are operated until steady conditions are established. Other contact grills are operated for 30 min after the centre of the heating surface attains a temperature of 275 °C.

Waffle irons are operated until steady conditions are established but for not longer than 30 min after the centre of the heating surface attains a temperature of 210 °C.

Raclette grills, barbecues and food dehydrators are operated until steady conditions are established.

Induction hotplates are operated for 30 min. Other hotplates are operated for 60 min.

For cookers, combinations of heating units that can be energized simultaneously are tested together, the heating units being switched on for the duration specified.

NOTE 101 If the appliance is subjected to more than one test, it is cooled to room temperature before each test.

11.8 Modification of 11.8 of JIS C 9335-1:

For radiant grills, rotary grills, raclette grills, hotplates and cookers, instead of 65 K, the temperature rise of the wall of the test corner shall not exceed 75 K.

Addition:

When an appliance connector incorporates a thermostat, the temperature rise limit for the pins of the appliance inlet does not apply.

The temperature rise limits of motors, transformers and components of electronic circuits, including parts directly influenced by them, may be exceeded when the appliance is operated at 1.15 times rated power input.

Cheese used in sandwich toasting attachments shall not flow into places where it could give rise to a hazard, such as reducing clearances or creepage distances below the values specified in clause 29.

12 Void

13 Leakage current and electric strength at operating temperature Leakage current and electric strength at operating temperature shall be as stated in clause 13 of JIS C 9335-1.

13.1 Addition to 13.1 of JIS C 9335-1:

If a grill is incorporated in an oven, either the oven or the grill is operated, whichever is more unfavourable.

13.2 Addition to 13.2 of JIS C 9335-1:

If there is earthed metal between live parts and the surface of glass-ceramic or similar material of hotplates, the leakage current is measured between live parts and each vessel in turn connected to the earthed metal. It shall not exceed 0.75 mA. If there is no earthed metal, the leakage current, measured between live parts and each of the vessels in turn, shall not exceed 0.25 mA.

13.3 Addition to 13.3 of JIS C 9335-1:

If there is earthed metal between live parts and the surface of glass-ceramic or similar material of hotplates, a test voltage of 1 000 V is applied between live parts and all the vessels connected to the earthed metal. If there is no earthed metal, a test voltage of 3 000 V is applied between live parts and the vessels.

14 Transient overvoltage Transient overvoltages shall be as stated in clause 14 of JIS C 9335-1.

15 Moisture resistance Moisture resistance shall be as stated in clause 15 of JIS C 9335-1.

15.2 Addition to 15.2 of JIS C 9335-1:

For ovens, 0.5 L of water containing approximately 1 % NaCl is poured uniformly over the bottom surface of the oven.

Hotplates and cookers are positioned so that the top surface is horizontal. A vessel having the largest diameter shown in figure 103, which does not exceed the diameter of the cooking zone, is completely filled with water containing approximately 1 % NaCl and positioned centrally over the cooking zone. A further quantity of approximately 0.5 L of the solution is poured steadily into the vessel over a period of 15 s. The test is carried out on each cooking zone in turn, after removing any residual solution from the appliance.

If the heating element of a hot plate incorporates a thermal control, 0.02 L of the saline solution is poured over the cooking zone so that it flows over the control. A vessel is then placed on the cooking zone to depress any movable part.

For hotplates having ventilating openings in the heated surface, 0.2 L of the saline solution is poured steadily through the funnel onto the ventilating openings. The funnel has an outlet diameter of 8 mm and is positioned vertically with the outlet 200 mm above the heated surface. The funnel is positioned above the ventilating openings so that the solution enters the appliance in the most unfavourable way.

NOTE 101 If the opening is protected, the funnel is positioned so that the solution falls onto the heated surface as close as possible to the opening.

For other appliances with heating elements that are covered by vessels in normal use, the spillage test is carried out by steadily pouring saline solution onto the heating surface over a period of 1 min, 0.1 L of solution being used for every 100 cm² of the heating surface.

The spillage test is not carried out on roasters.

15.101 Appliances intended to be partially or completely immersed in water for cleaning shall have adequate protection against the effects of immersion.

Compliance is checked by the following tests, which are carried out on three additional appliances.

The appliances are operated under normal operation at 1.15 times rated power input, until the thermostat operates for the first time. Appliances without a thermostat are operated until steady conditions are established. The appliances are disconnected from the supply, any appliance connector being withdrawn. They are then completely immersed in water containing approximately 1 % NaCl and having a temperature between 10 °C and 25 °C, unless they are marked with the maximum level of immersion, in which case they are immersed 5 cm deeper than this level.

After 1 h, the appliances are removed from the saline solution, dried and subjected to the leakage current test of **16.2**.

NOTE : Care is to be taken to ensure that all moisture is removed from the insulation around the pins of appliance inlets.

This test is carried out four more times, after which the appliances shall withstand the electric strength test of **16.3**, the voltage being as specified in table 4.

The appliance having the highest leakage current after the fifth immersion is dismantled and inspection shall show that there is no trace of liquid on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause **29**.

The remaining two appliances are operated under normal operation for 240 h at 1.15 times rated power input. After this period, the appliances are disconnected from the supply and immersed again for 1 h. They are then dried and subjected to the electric strength test of **16.3**, the voltage being as specified in table 4.

Inspection shall show that there is no trace of liquid on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause **29**.

16 Leakage current and electric strength Leakage current and electric strength shall be as stated in clause **16** of **JIS C 9335-1** except as follows.

16.1 Addition to **16.1** of **JIS C 9335-1**:

For hotplates, the tests are carried out with a vessel as specified for normal operation placed on each cooking zone.

16.2 Addition to **16.2** of **JIS C 9335-1**:

If there is earthed metal between live parts and the surface of glass-ceramic or similar material of hotplates, the leakage current is measured between live parts and each vessel in turn connected to the earthed metal. It shall not exceed 0.75 mA. If there is no earthed metal, the leakage current, measured between live parts and each of the vessels in turn, shall not exceed 0.25 mA.

16.3 Addition to **16.3** of **JIS C 9335-1**:

If there is earthed metal between live parts and the surface of glass-ceramic or similar material of hotplates, a test voltage of 1 250 V is applied between live parts and all the vessels connected to the earthed metal. If there is no earthed metal, a test voltage of 3 000 V is applied between live parts and the vessels.

17 Overload protection of transformers and associated circuits Overload protection of transformers and associated circuits shall be as stated in clause 17 of JIS C 9335-1.

18 Endurance Clause 18 of JIS C 9335-1 is not applicable.

19 Abnormal operation Abnormal operation shall be as stated in clause 19 of JIS C 9335-1 except as follows.

19.1 Addition to 19.1 of JIS C 9335-1:

The tests of 19.4 and 19.5 are only applicable to

- food dehydrators;
- the following appliances, if they incorporate a timer or if their instructions indicate a cooking operation longer than 1 h:
 - ovens;
 - roasters;
 - hotplates;
 - cookers;
 - rotary grills.

Toasters are also subjected to the tests of 19.101 and 19.102.

Induction hotplates are also subjected to the tests of 19.103 and 19.104.

19.2 Addition to 19.2 of JIS C 9335-1:

Radiant grills and raclette grills that are loaded from the front, rotary grills, ovens, hotplates and cookers are placed as near to the walls of the test corner as possible.

Appliances are tested empty. Lids and doors are open or closed, whichever is more unfavourable. Detachable parts are in position or removed, whichever is more unfavourable.

Hotplates are operated without a vessel and with the controls adjusted to the highest setting.

Induction hotplates are operated under the conditions of clause 11 but with empty vessels, controls being adjusted to the highest setting.

Cookers are only tested with the heating unit that results in the most unfavourable conditions, their controls being adjusted to the highest setting. However ovens are operated if they do not have an indicating lamp to show when they are switched on, controls being adjusted to the highest setting.

NOTE 101 A lamp used for illuminating the oven, which is visible through the door and is automatically switched on and off with the oven, is considered to be an indicating lamp.

19.4 Addition to 19.4 of JIS C 9335-1:

Air-circulating fans of food dehydrators are disconnected.

19.8 Subclause **19.8** of **JIS C 9335-1** is not applicable.

19.10 Subclause **19.10** of **JIS C 9335-1** is not applicable.

19.13 Addition to 19.13 of JIS C 9335-1:

During the test of **19.102** any flames or smoke from the bread are ignored.

The temperature rise of the windings of induction hotplates shall not exceed the values specified in **19.7**.

The electric strength test of induction hotplates is carried out immediately after switching off the appliance.

19.101 Toasters are operated at rated power input and under normal operation, but without bread, for six cycles of operation. The appliance is then allowed to cool to approximately room temperature.

This test is carried out 500 times.

The mechanism shall operate satisfactorily and no sustained arcing shall occur. Electrical connections shall not work loose and the appliance shall withstand the electric strength test of **16.3**.

NOTE 1 Forced cooling may be used.

NOTE 2 A simulated load may be necessary to operate the mechanism.

NOTE 3 Subclause **19.13** does not apply.

19.102 Toasters, loaded with the bread specified for normal operation, are operated at rated power input. The ejector mechanism is prevented from releasing and the supply is maintained to the heating elements after the timer has completed its cycle. The test is terminated after any fire has extinguished, after which any residual bread is removed from the toaster.

19.103 Induction hotplates are supplied at rated voltage and operated with a steel disk placed on the centre of the cooking zone. The disk has a thickness of 6 mm and the smallest diameter, rounded up to the nearest centimetre, which allows the appliance to operate.

19.104 Induction hotplates are supplied at rated voltage and operated under normal operation but with any control that limits the temperature during the test of clause **11** short-circuited.

NOTE: If the appliance incorporates more than one control, they are short circuited in turn.

The temperature rise of the oil shall not exceed 270 K.

20 Stability and mechanical hazards Stability and mechanical hazards shall be as stated in clause **20** of **JIS C 9335-1** except as follows.

20.101 Ovens exceeding 7 kg in mass having doors with a horizontal hinge at their lower edge and on which a load is likely to be placed shall have adequate stability. Compliance is checked by the following test.

The oven is placed on a horizontal surface with the door open and a mass of 3.5 kg is gently placed on the geometric centre of the door.

NOTE : A sandbag may be used for the load.

The oven shall not tilt.

This test is not carried out on ovens with doors having a dimension less than 225 mm for the hinge to the opposite edge or on ovens with doors which cannot support dishes in the fully open position.

21 Mechanical strength Mechanical strength shall be as stated in clause 21 of JIS C 9335-1 except as follows.

If the appliance incorporates visibly glowing heating elements enclosed in glass tubes, the blows are applied to the tubes as mounted in the appliance if they are

- located at the top of the oven and accessible to test probe 41 of JIS C 0922;
- located elsewhere in the oven and accessible to test probe B of JIS C 0922.
- accessible to test probe 41 of JIS C 0922, for such box type cooking appliances as oven toasters and roasters in which the roasting net (including such structure that the net is placed on roasting pan) comes out in conjunction with the door. The net is not removed even if it is attachable and detachable when the instruction states that removal of net shall be done after pulling the plug out. The above requirement is not applicable to the said box type cooking appliance equipped with upper glass tube heater, if the either of following conditions is satisfied:

- a) No glass tube heater exists within horizontal projection area of the opening.
- b) When protective bar of 60 mm width capable of enduring the load 1 N at its centre is located below the lower end of heater within the critical area where likely to come into contact with heater which spreads from directly below the heater to 15 mm short from the front end of heater.

NOTE : Opening means the area surrounded by ceiling and side walls of food entrance and roasting net.

For hotplates having surfaces of glass-ceramic or similar material, three blows are applied to parts of the surface that are not exposed to impacts during the test of 21.101, the impact energy being $0.70 \text{ J} \pm 0.05 \text{ J}$. The blows are not applied to surfaces within 20 mm of knobs.

NOTE 101 If the surface comprises a single piece of material, except for the outer frame, this test is not carried out.

21.101 Surfaces of hotplates of glass-ceramic or similar material shall withstand the stresses liable to occur in normal use.

Compliance is checked by the following test.

The hotplate is operated at rated power input with its control adjusted to the highest setting. Induction hotplates are operated as specified in clause 11. When steady conditions are established, the hotplate is switched off and a vessel with its base horizontal is dropped from a height of 150 mm onto the cooking zone. The vessel has a copper or aluminium base that is flat over a diameter of $120 \text{ mm} \pm 10 \text{ mm}$, its edges being rounded with a radius of at least 10 mm. It is uniformly filled with at least 1.3 kg of sand or shot so that the total mass is $1.80 \text{ kg} \pm 0.01 \text{ kg}$.

The vessel is dropped 10 times onto each cooking zone. It is removed and the appliance is operated at rated power input until steady conditions are established.

A quantity of $1^{+0.1}_0 \text{ L}$ of water containing approximately 1 % NaCl is poured steadily over the hotplate.

The appliance is then disconnected from the supply. After 15 min all excess liquid is removed and the appliance is allowed to cool to approximately room temperature. The same quantity of the saline solution is poured over the hotplate after which excess liquid is removed again.

The surface of the hotplate shall not be broken and the appliance shall withstand the electric strength test of 16.3.

22 Construction Construction shall be as stated in clause 22 of JIS C 9335-1 except as follows.

22.24 Addition to 22.24 of JIS C 9335-1:

Heating elements shall be constructed or supported so they are unlikely to become displaced in normal use.

Compliance is checked by inspection.

22.101 Radiant grills shall not incorporate a timer that is intended to delay the operation of a heating element, unless they have a thermostat and are incorporated in an oven or other compartment.

Compliance is checked by inspection.

22.102 Barbecues shall not have bare heating elements.

Bare heating elements for ovens shall only be located at the top of the heated compartment.

Compliance is checked by inspection.

22.103 Oven vents shall be constructed so that they do not discharge moisture or grease in such a way that clearances and creepage distances are affected.

Compliance is checked by inspection.

22.104 Ovens shall be constructed so that shelves can easily slide in the supports and do not fall out of position when the sides are displaced as much as possible.

Compliance is checked by inspection and by manual test.

22.105 Appliances shall not have openings on the underside that would allow small items to penetrate and touch live parts.

Compliance is checked by inspection and by measuring the distance between the supporting surface and live parts through openings. This distance shall be at least 6 mm. However, if the appliance is fitted with legs, this distance is increased to 10 mm if the appliance is intended to stand on a table and to 20 mm if it is intended to stand on the floor.

22.106 Grills and barbecues shall be constructed so that their heating elements are fixed in position or prevented from operating when they are not in their normal position of use.

Compliance is checked by inspection.

22.107 Hotplates shall be constructed so that heating elements are prevented from rotating about a vertical axis and are adequately supported in all positions of adjustment of their supports.

NOTE : If a heating element is clamped by a nut on a central stud, an additional means is required to prevent its rotation.

Compliance is checked by inspection.

22.108 Hotplates shall be constructed so that inadvertent operation of touch controls is unlikely if this could give rise to a hazardous situation due to

- spillage of liquids, including that caused by a vessel boiling over;
- a damp cloth placed on the control panel.

Compliance is checked by the following test, the appliance being supplied at rated voltage.

Sufficient water to completely cover the control panel to a depth not exceeding 2 mm, with a minimum of 140 ml, is poured steadily over the control panel so that bridging occurs between combinations of touch pads.

The test is carried out with each heating element energized in turn and then without energising any heating element.

A cloth having a mass between 140 g/m² and 170 g/m² and dimensions of 400 mm × 400 mm is folded four times into a square pad and saturated with water. It is placed over the control panel in any position.

There shall be no inadvertent operation of any heating element for longer than 10 s.

22.109 Hotplates incorporating touch controls shall require at least two manual operations to switch on a heating element but only one to switch it off.

NOTE : Touching the contact surface at the same point twice is not considered to be two operations.

Compliance is checked by manual test.

22.110 Induction hotplates shall be constructed so that they can only be operated with a suitable vessel placed on the cooking zone.

Compliance is checked by the following test, the appliance being supplied at rated voltage.

An iron bar 2 mm thick having dimensions 100 mm × 20 mm is placed in the most unfavourable position on the cooking zone. The controls are adjusted to their maximum setting.

The temperature rise of the bar shall not exceed 35 K.

22.201 An appliance incorporating flat control shall have a supply switch or supply plug and its buzzer shall sound when the flat control is pushed or the heater becomes "ON".

Compliance is checked by inspection.

22.202 Hotplates shall be constructed so that it is capable of being confirmed that "OFF" state is surely established by means of stop of turning, light, colour, sound, etc. when the switch is operated from "ON" to "OFF".

Compliance is checked by inspection.

23 Internal wiring Internal wiring shall be as stated in clause 23 of JIS C 9335-1 except as follows.

23.3 Addition to 23.3 of JIS C 9335-1:

For appliances which can be opened to two positions, 1 000 flexings are made with the part moved to the fully open position and the remaining flexings to the other position.

24 Components Components shall be as stated in clause 24 of JIS C 9335-1 except as follows.

24.1.3 Addition to 24.1.3 of JIS C 9335-1:

Switches controlling heating elements of hotplates are subjected to 50 000 cycles of operation.

24.1.4 Modification of 24.1.4 of JIS C 9335-1:

The following numbers of cycles of operation apply:

- energy regulators
 - for automatic action 100 000
 - for manual action 10 000
- self-resetting thermal cut-outs for heating elements of glass-ceramic hotplates 100 000

24.1.5 Addition to 24.1 of JIS C 9335-1:

For appliance couplers incorporating thermostats, thermal cut-outs or fuses in the connectors, IEC 60320-1 is applicable except that

- the earthing contact of the connector is allowed to be accessible, provided that this contact is not likely to be gripped during insertion or withdrawal of the connector.
- the temperature required for the test of clause 18 is that measured on the pins of the appliance inlet during the test of clause 11 of this Standard;
- the breaking-capacity test of clause 19 is carried out using the inlet of the appliance;
- the temperature rise of current-carrying parts specified in clause 21 is not determined.

NOTE 101 Thermal controls are not allowed in connectors complying with the standard sheets of **IEC 60320-1**.

24.101 Thermostats and energy regulators incorporating an off position shall not switch on as a result of variations in ambient temperature.

Compliance is checked by the following test that is carried out on three devices.

The device, set at the off position, is placed for 2 h in an ambient temperature of -20_{-5}^0 °C and then at

- t °C, where t is the temperature according to the T-marking;
- 55 °C, for devices without a T-marking.

During the test the off position shall be maintained.

A test voltage of 500 V is applied across the contacts for 1 min. No breakdown shall occur.

24.102 Thermal cut-outs incorporated in food dehydrators for compliance with **19.4** shall not be self-resetting.

Compliance is checked by inspection.

25 Supply connection and external flexible cords Supply connection and external flexible cords shall be as stated in clause 25 of **JIS C 9335-1** except as follows.

25.1 Addition to 25.1 of **JIS C 9335-1**:

Appliances incorporating an appliance inlet that does not comply with the standard sheets of **IEC 60320-1** shall be supplied with a cord set.

25.22 Addition to 25.22 of **JIS C 9335-1**:

For appliances which may cause such injury as burn when excess tension is applied to the supply cord, magnetic plugs may be used.

26 Terminals for external conductors Terminals for external conductors shall be as stated in clause 26 of **JIS C 9335-1**.

27 Provision for earthing Provision for earthing shall be as stated in clause 27 of **JIS C 9335-1** except as follows.

27.1 Addition to 27.1 of JIS C 9335-1:

Earthing continuity shall not depend upon flexible metallic tubes, coiled springs or cord anchorages.

28 Screws and connections Screws and connections shall be stated in clause 28 of JIS C 9335-1.

29 Clearances, creepage distances and solid insulation Clearances, creepage distances and solid insulation shall be as stated in clause 29 of JIS C 9335-1 except as follows.

29.2 Addition to 29.2 of JIS C 9335-1:

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

29.3 Addition to 29.3 of JIS C 9335-1:

This requirement does not apply to the sheath of a visibly glowing heating element that is inaccessible to test probe 41 of JIS C 0922.

30 Resistance to heat and fire Resistance to heat and fire shall be as stated in clause 30 of JIS C 9335-1 except as follows.

30.1 Addition to 30.1 of JIS C 9335-1:

Temperature rises occurring during the test of 19.101 are not taken into account.

30.2 Addition to 30.2 of JIS C 9335-1:

For ovens, roasters and rotary grills, if they incorporate a timer or if their instructions indicate a cooking operation longer than 1 h, and for food dehydrators, 30.2.3 is applicable.

For other appliances, 30.2.2 is applicable.

31 Resistance to rusting Resistance to rusting shall be as stated in clause 31 of JIS C 9335-1.

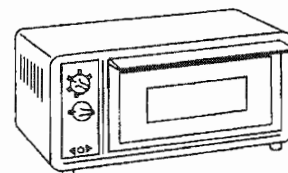
32 Radiation, toxicity and similar hazards Radiation, toxicity and similar hazards shall be as stated in clause 32 of JIS C 9335-1.



Waffle iron



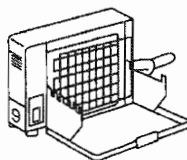
Hotplate



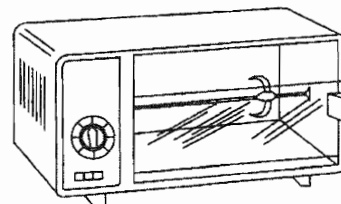
Oven



Barbecue



Radiant grill



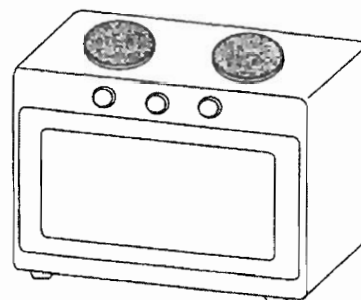
Rotary grill



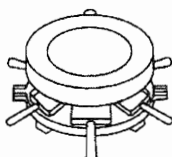
Contact grill



Griddle



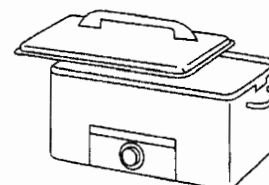
Cooker



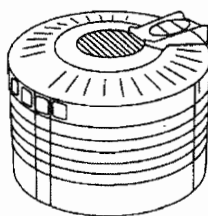
Raclette grill



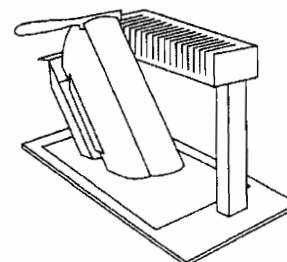
Toaster and sandwich-
toasting attachment



Roaster



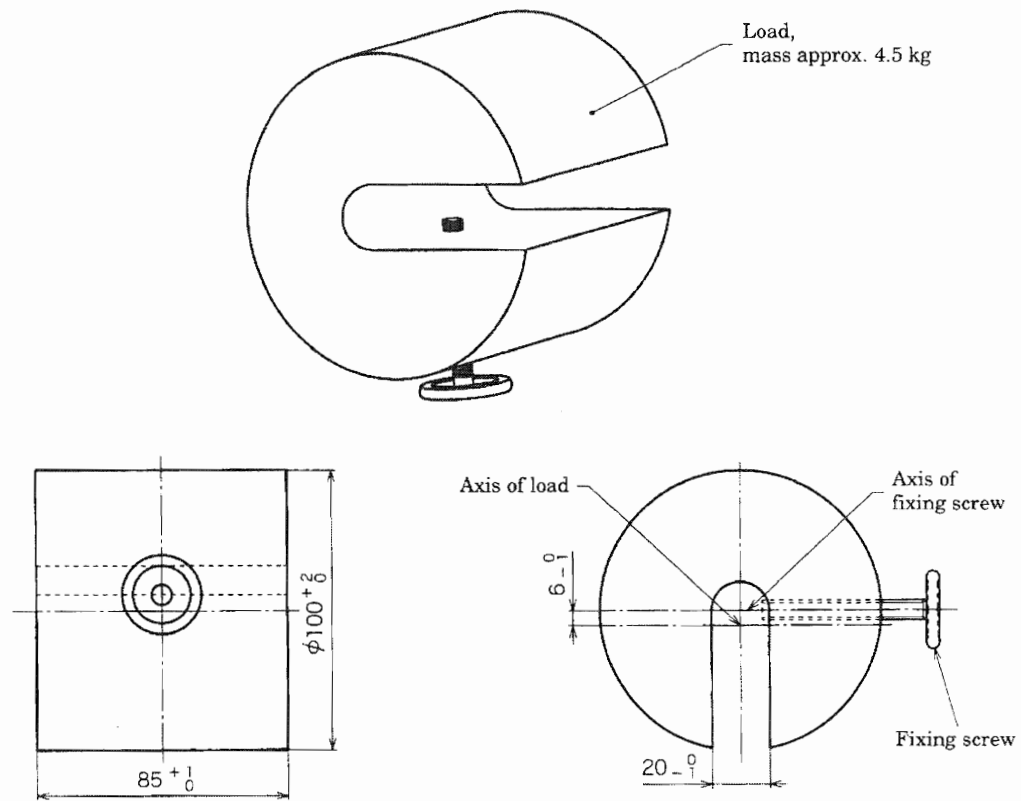
Food dehydrator



Raclette appliance

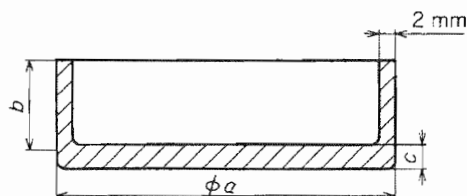
Attached Figure 101 Examples of appliances

Unit: mm



NOTE : The load is positioned on the rotary spit so that the fixing screw contacts the diameter of the spit.

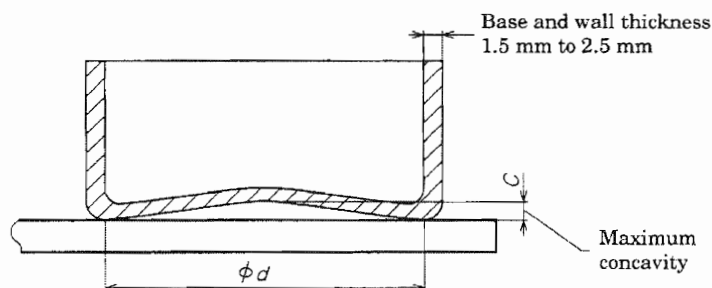
Attached Figure 102 Load for testing rotating spits



Diameter of cooking zone mm	a mm	b mm	c mm
≤ 110	110	140	8
$> 110 \leq 145$	145	140	8
$> 145 \leq 180$	180	140	9
$> 180 \leq 220$	220	120	10
$> 220 \leq 300$	300	100	10

NOTE : The maximum concavity of the vessel is to be not more than 0.05 mm. The base of the vessel is not to be convex.

Attached Figure 103 Vessel for testing hotplates



NOTE : The vessel is made of low carbon steel having a maximum carbon content of 0.08 %. It is cylindrical without metallic handles or protrusions. The diameter of the flat area of the base of the vessel is to be at least the diameter of the cooking zone. The maximum concavity C of the base of the vessel is $0.006 d$. The base of the vessel is not to be convex.

Attached Figure 104 Vessel for testing induction hotplates

Annexes

The annexes of **JIS C 9335-1** are applicable except as follows.

Annex C (normative) **Ageing test on motors**

Modification:

The value of p in table C.1 is 2 000.

Annex 1 (informative)

Comparison table between JIS and corresponding International Standard

JIS C 9335-2-9 : 2004 Household and similar electrical appliances—Safety—Part 2-9 : Particular requirements for toasters, grills, roasters and similar appliances				ISO 60335-2-9 : 2002 Household and similar electrical appliances—Safety—Part 2-9 : Particular requirements for toasters, grills, roasters and similar appliances			
(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
1 Scope	Safety of electric appliances for household purposes that have a cooking function such as baking, roasting and grilling, their rate voltage being not more than 250 V	IEC 60335-2-9	1	Identical with JIS. However, oven toasters are added in JIS.	MOD/ addition	—	Oven toasters which are used in Japan are added in JIS, and their application is made clear.
2 Normative references	As specified in JIS C 9335-1.	IEC 60335-2-9	2	Identical with JIS.	IDT		
3 Definitions	Normal operation of each product, definitions of products 3.1.9.101 Size of bread for toaster 120 mm × 130 mm × 20 mm	IEC 60335-2-9	3	3.1.9.101 Dimensions of bread for toaster 100 mm × 100 mm × 10 mm	MOD/ alteration and addition	3.1.9.101 JIS adopts Japanese bread cut into six as the standard.	3.1.9.101 Dimensions of bread stated in IEC are smaller than those of Japanese bread, therefore the later can not be toasted by IEC standard toaster.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
3 Definitions (concluded)	<p>3.1.9.102 If the maximum load is described in the instructions for the load of rotary grills, a weight of said mass shall be used.</p> <p>3.201 flat control: control actuated by mechanical contacts pushed by a finger. However control by a pressure not exceeding 0.4 N is considered to be touch control.</p>			<p>3.1.9.102 For rotary grills figure 102 is applicable.</p> <p>No definition of flat control.</p>		<p>3.1.9.102 In JIS, if the maximum load is indicated in the instructions, rotary grills are tested at the stated mass.</p> <p>3.201 In JIS, a switch which utilizes a micro-switch (with functional contacts) is defined separately from "touch control".</p>	<p>3.1.9.102 In IEC Standard, large sized ovens are assumed; but some of Japanese small sized appliances can not drive the weight of 4.5 kg in mass.</p> <p>3.201 Users cannot turn "ON" the switch with mechanical contacts without realizing it, therefore safety mechanism for "touch control" (ON is made by operations of two different kinds) is not necessary. Accordingly, definitions for said two controls are made separately. Proposal to IEC is under consideration.</p>
4 General requirement	General rules for safety	IEC 60335-2-9	4	Identical with JIS .	IDT	—	
5 General conditions for the tests	Sample size, type of appliance, etc.	IEC 60335-2-9	5	Identical with JIS .	IDT	—	
6 Classification	As specified in JIS C 9335-1 .	IEC 60335-2-9	6	Identical with JIS .	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
7 Marking and instructions	Marking of ratings, contents of description in instruction for each appliance	IEC 60335-2-9	7	7.12 Oven toaster is added.	MOD/addition	Oven toasters are added in the specification where contents of instructions are stated.	
8 Protection against access to live parts	Inspection by means of test finger and test probe.	IEC 60335-2-9	8	Identical with JIS.	IDT	—	
9 Staring of motor-operated appliances	Not applicable.	IEC 60335-2-9	9	Identical with JIS.	IDT	—	
10 Power input and current	Provisions for motor-operated appliances are applied to induction hotplates.	IEC 60335-2-9	10	Identical with JIS.	IDT	—	
11 Heating	Set-up conditions, test duration, test voltage, points of temperature measurement, etc. are specified.	IEC 60335-2-9	11	Identical with JIS.	IDT	—	
12 Void	No specification.	IEC 60335-2-9	12	Identical with JIS.	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
13 Leakage current and electric strength at operating temperature	Leakage current test and electric strength test under running conditions	IEC 60335-2-9	13	Identical with JIS.	IDT	—	
14 Transient overvoltages	Alternative test by means of impulse test for the part where the specified value of clearance is not satisfied.	IEC 60335-2-9	14	Identical with JIS.	IDT	—	
15 Moisture resistance	Spillage test, moisture resistance test and water immersion test	IEC 60335-2-9	15	Identical with JIS.	MOD/ addition	—	
16 Leakage current and electric strength	Evaluation of insulation after moisture resistance test	IEC 60335-2-9	16	Identical with JIS.	IDT	—	
17 Overload protection of transformers and associated circuits	Temperature test of transformer under simulated overload or short circuit	IEC 60335-2-9	17	Identical with JIS.	IDT	—	
18 Endurance	Not applicable.	IEC 60335-2-9	18	Identical with JIS.	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
19 Abnormal operation	Limiting of heat dissipation, fixing of ejector of toaster, abnormal operation of induction hotplates, etc.	IEC 60335-2-9	19	Identical with JIS .	IDT	—	
20 Stability and mechanical hazards	Stability when door of oven is opened. Appliances exceeding 7 kg in mass are subjects.	IEC 60335-2-9	20	Identical with JIS . However no limit in mass.	MOD/ alteration	In JIS , this characteristic is applicable for ovens exceeding 7 kg only.	IEC assumes large sized ovens, but Japanese original oven toaster can not satisfy IEC specification (place a platter of 3.5 kg in mass on the door which also serves as stand) because it has smaller mass (normally 2 kg to 3 kg). Ovens not more than 7 kg are excluded from the subject for test because they are assumed not to satisfy the above specification. Proposal to IEC is under consideration.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
21 Mechanical strength	Strength test of glass and ceramic material (surface of door and hob) Application of impact hammer to glass tube heater is made on the area accessible to test prove 41 of JIS C 0922 , for such box type cooking appliances as oven toasters and roasters in which the roasting net (including such structure that the net is placed on roasting pan) comes out in conjunction with the door. The net is not removed even if it is attachable and detachable when the instruction states that removal of net shall be done after pulling the plug out. The above requirement is not applicable to the said box type cooking appliance equipped with upper glass tube heater, if either of the following conditions is satisfied.	IEC 60335-2-9	21	Impact hammer is applied to glass tube heaters if they are — located at the top of the oven and accessible to test probe 41 of IEC 61032 — located elsewhere in the oven and accessible to test probe B of IEC 610-32	MOD/ addition	In JIS , application of impact hammer onto glass tube heater is relaxed.	Glass tube heaters of Japanese compact oven toasters are not protected by guards, although such a fact is not assumed in IEC . Therefore it is recognized in Japan that the heater is somewhat weak and fragile. Covering of glass tubes by guards causes burden, i.e. decrease of performance, large increase of cost, etc. Therefore safety specification was excluded from JIS for such appliances. However, no guard may cause safety problems, therefore large sized guard netting is allowed for lower heaters and cleaning is taken into consideration in this revision, without immediate conformity with the revised IEC . Further no impact is applied to appliances of such construction that safety at putting in and taking out of cooking is taken into consideration.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
21 Mechanical strength (concluded)	<p>a) No glass tube heater exists within horizontal projection area of the opening.</p> <p>b) When protective bar of 60 mm width capable of enduring the load 1 N at its centre is located below the lower end of heater within the critical area where likely to come into contact with heater which spreads from directly below the heater to 15 mm short from the front end of heater.</p>						
22 Construction	<p>Construction in general, prevention of ingress of hazardous items from underside, prohibition of unexpected "ON" state of switch, etc.</p> <p>22.201 An appliance incorporating flat control shall have a supply switch and its buzzer shall sound when the flat control is pushed or the heater becomes "ON".</p>	IEC 60335-2-9	22	Identical with JIS . However, IEC does not require verification of flat control and mechanical switch.	MOD/ addition	JIS requires such construction for flat control and mechanical switch that their operation can be verified.	Specifications are added because definition of flat control is added separately from touch control. For other mechanical switches, verification of "ON" of switches is required for prevention of fire based on housing circumstance and actual results of fire in Japan.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
22 Construction (concluded)	22.202 Hotplates shall be constructed so that it is capable of being confirmed that "OFF" state is surely established by means of stop of turning, light, colour, sound, etc. when the switch is operated from "ON" to "OFF". Compliance is checked by inspection.						
23 Internal wiring	Bending test of internal wiring and the like	IEC 60335-2-9	23	Identical with JIS .	IDT	—	
24 Components	Make-break test of switches and automatic controls Specification of plugs incorporating thermostat Prohibition of automatic transfer to "ON" of thermostats due to variation of ambient temperature	IEC 60335-2-9	24	Identical with JIS .	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
25 Supply connection and external flexible cords	Types and sectional areas of supply cords, use of magnetic plug, etc.	IEC 60335-2-9	25	Identical with JIS . However, use of magnetic plugs is not stated.	MOD/addition	JIS clearly admits use of magnetic plugs.	IEC 60320-1 does not admit use of magnetic plugs, but JIS admits use of magnetic plugs only for appliances which may cause burn due to unexpected pull of supply cord (actually only for appliances of 100 V which does not need earth wire). Magnetic plugs are necessary as a counter measure to prevent burn when the service style in Japanese housing (placing appliances on TATAMI mat) is taken into consideration.
26 Terminals for external conductors	As specified in JIS C 9335-1 .	IEC 60335-2-9	26	Identical with JIS .	IDT	—	
27 Provision for earthing	As specified in JIS C 9335-1 . However, the continuity shall not be relied upon coil springs or the like.	IEC 60335-2-9	27	Identical with JIS .	IDT	—	
28 Screws and connections	As specified in JIS C 9335-1 .	IEC 60335-2-9	28	Identical with JIS .	IDT	—	

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines		(V) Justification for the technical deviation and future measures
Clause	Content		Clause	Content	Classification by clause	Detail of technical deviation	
29 Clearances, creepage distances and solid insulation	Clearances, creepage distances and thickness of solid insulation Apply pollution degree 3. For visible glowing heating element inaccessible to test probe, the requirement of thickness of solid insulation is not applicable.	IEC 60335-2-9	29	Identical with JIS.	IDT	—	
30 Resistance to heat and fire	Ball pressure test, glow-wire test, needle-flame test	IEC 60335-2-9	30	Identical with JIS.	IDT	—	
31 Resistance to rusting	As specified in JIS C 9335-1.	IEC 60335-2-9	31	Identical with JIS.	IDT	—	
32 Radiation, toxicity and similar hazards	No special statement.	IEC 60335-2-9	32	Identical with JIS.	IDT	—	
Annexes	As specified in JIS C 9335-1. However, the value of p in table C of annex C is 2 000.	IEC 60335-2-9	Annexes	Identical with JIS.	IDT	—	
Designated degree of correspondence between JIS and International Standard: MOD							

- Remarks 1 Symbols in sub-columns of classification by clause in the comparison table indicate as follows:
- IDT: Identical in technical contents.
 - MOD/addition: Adds specification item(s) or content(s) not included in International Standard.
 - MOD/alteration: Alters the specification content(s) included in International Standard.
- 2 Symbol in column of designated degree of correspondence between **JIS** and International Standard in the comparison table indicates as follows:
- MOD: Modifies International Standard.

Reference standards

The reference standards in **JIS C 9335-1** are applicable except as follows.

Addition:

- JIS C 9335-2-6 *Household and similar electrical appliances—Safety—Part 2-6 : Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances*
- JIS C 9335-2-12 *Household and similar electrical appliances—Safety—Part 2-12 : Particular requirements for warming plates and similar appliances*
- JIS C 9335-2-13 *Household and similar electrical appliances—Safety—Part 2-13 : Particular requirements for deep fat fryers, frying pans and similar appliances*
- JIS C 9335-2-25 *Household and similar electrical appliances—Safety—Part 2-25 : Particular requirements for microwave ovens, including combination microwave ovens*
- JIS C 9335-2-78 *Household and similar electrical appliances—Safety—Part 2-78 : Particular requirements for outdoor barbecues*

Errata for JIS (English edition) are printed in *Standardization Journal*, published monthly by the Japanese Standards Association, and also provided to subscribers of JIS (English edition) in *Monthly Information*.

Errata will be provided upon request, please contact:

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